

REMARKS

The Examiner's Action mailed on December 15, 2005, has been received and its contents carefully considered. Additionally attached to this Amendment is a Petition for a One-month Extension of Time, extending the period for response to April 15, 2006, together with the requisite fee.

In this Amendment, Applicant has amended independent claim 1 to include the subject matter of dependent claim 26, amended claims 6 and 8, canceled claim 26, and has added claim 27. Claim 1 is the independent claim, and claims 1-10, 21-25 and 27 are pending in the application. For at least the following reasons, it is submitted that this application is in condition for allowance.

The Examiner has rejected claims 1-10 and 21-26 as being obvious over *Kim* in view of *Koike* and *Fournel et al.* Because the subject matter of claim 26 has been added into independent claim 1, and since claim 26 has been canceled and claim 27 added to the application, Applicant will treat this rejection as pertaining to pending claims 1-10, 21-25 and 27. It is submitted that these claims are *prima facie* patentably distinguishable over the cited combination of references for at least the following reasons.

Applicant's independent claim 1 is directed to a semiconductor device. The semiconductor device includes a semiconductor substrate and a fuse circuit disposed on the substrate. The fuse circuit includes first and second electrode

pads, and a conductive line that extends from the first conductive pad to the second conductive pad. The conductive line is formed from a first conductive region that has a multilayered structure, and a second conductive region that has a less layered structure than a first conductive region. The advantages of this claimed configuration are discussed in Applicant's specification. This claimed invention is neither disclosed nor suggested by the cited references.

Kim is directed to a semiconductor device which includes a fuse box 295. As shown in Figure 2D, an insulating film 220 is disposed at the base of the fuse box 295, with the fuse 210 being located under the insulating film 220 and over the semiconductor substrate 200. This reference also discloses that a fuse cutting process is performed through the fuse box, as discussed in column 1, lines 21-26.

However, and in contrast to the present invention, this reference does not disclose or otherwise suggest a fuse circuit that comprises first and second electrode pads, with a conductive line extending from the first electrode pad to the second electrode pad. It is noted that the Examiner's Action has not even addressed this feature with respect to original dependent claim 26, the subject matter of which is now included within independent claim 1.

The Examiner's Action also relies on the teachings of *Koike* and *Fournel et al.* However, the Examiner's Action is only relying on *Fournel et al.* for disclosing positioning a fusible strip towards an upper portion of the device. As shown in

Figure 1, this fusible strip 2 is disposed under a window 18, to allow the fusible strip to be blown or ruptured using a laser beam, as discussed in paragraph number 3. However, this reference does not disclose or suggest a fuse circuit that comprises first and second electrode pads with a conductive line extending therebetween, as recited by claim 1.

Moreover, the Examiner's Action also relies on *Koike* for disclosing a bridge structure. As shown in Figure 13, this reference discloses forming a fuse window 70 over a copper line, through which the metal fuse can be blown using laser light, as discussed in column 1 of this reference. However, and similar to the above-noted deficiencies of the other two references, this reference also fails to disclose or suggest a fuse circuit that comprises first and second electrode pads and a conductive line extending therebetween. As such, it is submitted that the Examiner's Action has failed to establish a *prima facie* case of obviousness against original dependent claim 26, the subject matter of which is now incorporated within independent claim 1.

Moreover, it is submitted that the dependent claims are *prima facie* patentably distinguishable over the cited references for at least the same reasons as independent claim 1, as well as for at least the following additional reasons.

Claim 2 recites that the second conductive region is formed to have a single layer structure. Again, the Examiner's Action has not addressed this

feature. Moreover, none of the cited references disclose or suggest such a single layer structure. Instead, each of the references discloses a fuse window having multiple layers therebelow.

Additionally, claim 3 recites that the second conductive region is an uppermost layer. Again, the Examiner's Action has not addressed this particular feature. Although the Examiner's Action does rely on *Fournel et al.* as teaching that a fuse layer may be formed near the top of the fuse structure, it is noted that this reference does not disclose or suggest that the fuse layer is the uppermost layer, as recited by claim 3.

Additionally, claim 4 recites that there is no passivation layer formed over the second conductive region. The Examiner's Action has not addressed this feature. Moreover, each of the cited references discloses what appears to be a passivation layer over the respective conductive lines.

Moreover, claim 6 recites that a length of the second conductive region along the conductive line is not larger than a double width of the conductive line. Again, the Examiner's Action has not addressed this feature. Moreover, none of the cited references discloses or suggests this claimed configuration.

Moreover, dependent claim 8 recites that a predetermined voltage is applied between the first and second electrode pads in order to disconnect the second conductive region. Similarly, claim 27 recites that when electric current

exceeds a threshold level, the conductive line melts to prevent the flow of the electric current. The Examiner's Action has not addressed this feature recited within claim 8. Moreover, each of the cited references discloses that the fuses are blown through the respective windows, for example by using lasers, and do not disclose or suggest that the fuse is disconnected in the manner recited in claim 8 or claim 27.

Additionally, claim 21 recites that the first and second conductive regions form a bridge structure, with the second conductive region extending over a semiconductor substrate with a space therebetween. The Examiner's Action relied on the teachings of *Koike* as disclosing a bridge structure. However, this so-called bridge structure does not extend over the semiconductor substrate 11 with a space therebetween. Instead the "bridge structure" extends over respective BPSG insulating layers.

Additionally, and as noted above, this reference does not disclose that the second conductive region forms an uppermost layer, as recited in claim 22.

Additionally, the subject matter of claims 23 and 24 is not disclosed or suggested by the cited reference for reasons presented above with respect to the other dependent claims. As such, it is submitted that Applicant's claims are patentably distinguishable over the cited reference. It is thus requested that the claims be allowed and that the various rejections be withdrawn.

It is submitted that this application is in condition for allowance. Such action and the passing of this case to issue are requested.

Should the Examiner feel that a conference would help to expedite the prosecution of this application, the Examiner is hereby invited to contact the undersigned counsel to arrange for such an interview.

Should the remittance be accidentally missing or insufficient, the Commissionaire is hereby authorized to charge the fee to our Deposit Account No. 18-0002, and advise us accordingly.

Respectfully submitted,

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Date

RHB/vm



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